The Effects of an Online Training on Pre-Service Speech-Language Pathologists’ Use of Family-Centered Skills

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Abstract

Purpose: Despite the recognition that family-centered services are best-practice in Augmentative and Alternative Communication services, many speech-language pathologists are lacking in their acquisition and implementation of family-centered skills. The purpose of this study was to evaluate the effects of online instruction in a family-centered, relational skills strategy on pre-service SLPs’ use of family-centered skills.

Method: A switching-replications design was used to evaluate the effects of an online training on the use of family-centered behaviors by fifteen pre-service SLPs’ who were randomly assigned to two groups. The online training taught the students a four-step relational skills strategy (summarized by the acronym, LAFF): (a) Listen, empathize, and communicate respect; (b) Ask questions; (c) Focus on the issues; and (d) Find a first step. Participants were videotaped during interactions with simulated parents before and after the training.

Results: After an average of 61 minutes of instruction via the online module, all of the pre-service SLPs significantly improved their demonstration of relational skills. Additionally, one parent of a child who used AAC viewed the video recordings and chose 14 of the 15 post-instruction role plays as more family-centered.

Conclusion: The findings from this study provide support for the use of an online environment to teach pre-service SLPs family-centered relational skills. In order to prepare future SLPs and ensure the delivery of family-centered services, future research is necessary, including investigations to determine whether other family-centered skills can be effectively taught through an online environment.
For a child with disabilities, his or her family is the constant or consistent factor. While professionals may come and go, the family grows with the child, sees the child in most settings, and knows the child’s needs best. Considering the interdependence of the family and child, the way in which professionals support children with disabilities and their families has the potential to enhance or to hinder child and family outcomes (Dempsey & Keen, 2005).

Over the last few decades, growing recognition of the importance of family input and participation has led to a change in the expected model of service delivery. There is now acknowledgement that families are an essential part of service delivery and are key decision makers concerning their child’s services (Dunst, Trivette, & Hamby, 2007). Professionals are now expected to deliver family-centered services which recognize that each member of the family is important and impacts the child’s life. Arango (2011) describes family-centered practice as a partnership characterized by trust, respect, and open communication—where families and professionals work together to make decisions in the best interest of the child.

As part of this change from professionally-centered to family-centered services, professional organizations have transformed their philosophies and skill requirements in order to include families in service provision and develop professionals who can work effectively with them. For speech-language pathologists (SLPs), it is their role and responsibility to “recognize the essential role that families play in all aspects of service, from assessment through treatment, and the role that families and individuals play as key decision makers, recognized for their knowledge and skills” (American Speech-Language-Hearing Association, n.d.a).

Despite the push for family-centered service provision, evidence suggests that families do not always receive these services from their children’s SLP (Mandak & Light, 2018a, Marshall & Goldbart, 2008). SLPs have reported their lack of training in family-centered services and the
challenges faced when working with families (Mandak & Light, 2018a, 2018b). To improve outcomes for children with disabilities and their families, it is necessary to identify effective ways to improve the family-centered skills of SLPs.

**Children who use AAC**

Although SLPs should provide family-centered services to all children and families, evidence suggests one group for whom family-centered services are especially vital, but critically lacking—children with complex communication needs (CCN) who may rely on augmentative and alternative communication (AAC) (Bailey, Parette, Stoner, Angell, & Carroll, 2006; Mandak & Light, 2018a; McNaughton, Rackensperger, Benedek-Wood, Krezman, Williams, & Light, 2008). For children with CCN, it is well documented that positive AAC outcomes are dependent on the family’s involvement and the development of a successful family-professional partnership (Angelo, Jones, & Kokoska, 1995; Cress, 2004). Historically, families were not part of the AAC decision making process. The professional typically made treatment decisions, while families provided information (Parette & Angelo, 1996). Considering that family members are often the most significant and most frequent communication partners for children who use AAC, they must be involved in making decisions (Granlund, Björck-Akesson, Wilder, & Ylvén, 2008). Many families agree and express their desire to be key members of the AAC decision-making team (Calculator & Black, 2010; McNaughton et al., 2008). When family members are part of the team, and when their routines and patterns of life are considered, there is a greater likelihood that they will assume ownership of the planned interventions (Parette & Angelo, 1996). These factors all contribute to the growing recognition of the importance of family input and the acknowledgement that families are an integral part of the AAC decision-making process (Bailey et al., 2006; Cress, 2004).
Accordingly, it has been recognized as best practice to implement family-centered AAC services (Cress, 2004; Mandak, O’Neill, Light, & Fosco, 2017). Decades of research provide evidence of the benefits of family-centered services as they have been linked to many positive parent, family, and child outcomes (Dunst et al., 2007). A meta-analysis of nearly 50 studies showed that family-centered services resulted in greater family satisfaction with services; stronger self-efficacy beliefs within the family; greater family empowerment; improved family ratings of the helpfulness of supports and resources; improved parent judgements of child behavior, progress, and functioning; and increased family and individual well-being (Dunst et al., 2007). Despite the documented benefits, many SLPs still adhere to a professionally-centered mindset (Iacono & Cameron, 2009; Mandak & Light, 2018a, 2018b), in which professionals see themselves as experts, while families are seen as less capable in knowing what is in the best interest of the child (Dunst, Johanson, Trivette & Hamby, 1991). For families with children with CCN, a lack of family-centered services can result in the selection of inappropriate AAC systems, which can diminish the likelihood of positive AAC outcomes and lead to abandonment of AAC strategies (Parette & Angelo, 1996; McNaughton, Hamlin, McCarthy, Head-Reeves, & Schreiner, 2008).

**Family-centered Skill Sets**

In order for SLPs to deliver family-centered services, they must acquire specific skills to work effectively with children and their families. Over the years, Dunst and colleagues (1991, 2002, 2007) have thoroughly investigated the implementation of family-centered services and the necessary skills to provide such services. They found a distinct subset of skills, called relational skills, to be vitally important to providing family-centered services. Relational skills include behaviors that are typically associated with effective clinical practice (i.e., active and reflective
listening, compassion, empathy, respect, and effective communication), as well as maintaining positive beliefs and attitudes toward families, especially those regarding parenting competencies and family strengths (Dunst et al., 2007).

Of the family-centered skill sets, many SLPs assume they are using relational skills adequately (Mandak & Light, 2018a). For example, Mandak and Light surveyed 211 SLPs who served children with autism spectrum disorder and CCN. A number of questions were aimed at relational skills such as treating families with respect and viewing families as competent and equal members of the team. They found that nearly all the SLPs perceived that they treated parents respectfully, helped parents feel competent, treated parents as individuals and equals, and ensured that parents had a chance to say what was important to them. Unfortunately, parent perspectives suggested otherwise. In the same study, some of the parents of children with CCN surveyed reported that their children’s SLP did not help them feel competent as parents (57% of parents), did not treat them as equals (44%) or individuals (50%) and did not provide them enough time to talk during interactions (52%) (Mandak & Light, 2018a). Another study also found that families of children who use AAC reported that professionals lacked sensitivity and understanding of family demands (Marshall & Goldbart, 2008). If relational skills are indeed lacking in AAC service provision as the evidence suggests from parents’ perspectives, it is unlikely that children and families will realize the benefits of family-centered services.

**Pre-service Training**

One of the key barriers to family-centered AAC services is the lack of pre-service training in family-centered services (i.e., training at the graduate level). Research suggests that many SLPs do not receive family-centered training in their pre-service programs. For example, Mandak and Light (2018a) found that more than half of the 211 SLPs reported that they received
no training in family-centered service provision during their graduate training program. Another
group of SLPs who participated in an online focus group also shared their experiences related to
pre-service training in family-centered services (Mandak & Light, 2018b). None of the SLPs
reported graduate coursework specifically focused on family-centered services and all agreed
that their graduate training could have been improved to better prepare them to more effectively
work with families.

Given the importance of family-centered services and the lack of training and coursework
for SLPs, it is urgently necessary to determine how to best teach SLPs the necessary knowledge
and skills to deliver effective family-centered services. Targeting skills that extend across
populations and contexts, such as relational skills, may be the most parsimonious way to
integrate family-centeredness into graduate training (Brown & Woods, 2011; Dunst et al., 2007).

**Evidence-based Relational Skills**

Two published reviews of evidence-based family-centered measures (Dunst, Trivette, &
Hamby, 2006; Porter et al., 2012) showed four sets of relational skills necessary for family-
centered service provision: a) Treating families with respect, as competent individuals and
equals; b) Accepting families in an honest, caring, non-judgmental atmosphere; c) Actively
listening to families’ needs, concerns, and priorities; and d) Recognizing the families’ strengths
and moving forward based on the strengths and desires of the families. Though these practices
are consistently cited as necessary for family-centered service provision, SLPs may need
guidance as it can be difficult to operationalize these practices into concrete clinical skills (e.g.,
how to demonstrate respect to a parent). There is also limited understanding of how to most
effectively and efficiently teach individuals these skills.
In response to these challenges, researchers have sought to improve the use of specific relational skills by pre-service SLPs. Some have targeted one skill at a time (e.g., targeting “mindfulness” in Beck, Verticchio, Seeman, Milliken, & Schaab, 2017; Beck & Verticchio, 2018), while others have attempted to teach multiple skills at once (e.g., Kadarevak, Laux, & Mills, 2004). For example, Kadarevak et al. (2004) implemented a counseling training module for 10 pre-service SLPs over the period of three class sessions (i.e., 8 hours of time). Each session was designated to teach a subset of relational skills (i.e., developing a therapeutic relationship through nonverbal behaviors, eye contact, and silence; asking open-ended questions; and paraphrasing and summarizing emotions and concerns). Pre-and post interviews were completed with students who played the roles of parents. Following the training module, the pre-service SLPs were perceived as demonstrating improved counseling skills by blind raters using The Counselor Rating Form (CRF). Despite the reported positive gains of this study, the findings should be interpreted with caution as there was no measure of the pre-service SLPs’ actual implementation of the targeted relational skills.

Another group of researchers developed a multi-skill strategy in order to improve the relational skills of students in the helping professions (McNaughton et al., 2008; Thistle & McNaughton, 2015; Vostal, McNaughton, Benedek-Wood, & Hoffman, 2015). Participants in these studies included pre-service SLPs (Thistle & McNaughton, 2015) and pre-service teachers (McNaughton et al., 2008; Vostal et al., 2015). Across the studies, a four-step strategy was taught, summarized by the acronym LAFF: (a) Listen, empathize, and communicate respect; (b) Ask questions; (c) Focus on the issues; and (d) Find a first step. Although the authors labeled their strategy as an “active listening” strategy, it also incorporates the other three highly cited
relational skills of providing a caring atmosphere, treating families with respect, and moving forward based on family desires.

Of particular interest to the present study are the findings from Thistle and McNaughton (2015), who used a pre-test post-test design to examine the effects of instruction. Before and after 90-minutes of in-person instruction in the LAFF strategy, 23 pre-service SLPs participated in simulated role plays. The simulated role plays were developed to simulate a parent meeting with the child’s SLP and were based on common concerns expressed by parents of young children who use AAC. Role plays with simulated parents are helpful for pre-service professionals because it is often hard to predict when challenging parent interactions will occur. It is thus difficult to observe a challenging parent interaction during actual services and use the interaction for instructional purposes (Hill, Davidson, & Theodoros, 2010). Following instruction, all pre-service SLPs increased their implementation of the LAFF strategy in the simulated role plays. Seven parents of children who used AAC viewed pairs of simulated role plays and responded to forced choice questions regarding the simulated interactions (i.e., In which video did you think the SLP demonstrated stronger communication skills?) and open-ended questions (i.e., In the video you just indicated as demonstrating stronger communication skills, what were the positive communication behaviors exhibited by the SLP?). The parents chose the pre-service SLPs in the post-role plays as stronger communicators the majority of the time (i.e., 79%) suggesting that the pre-service SLPs benefited from the strategy instruction (Thistle & McNaughton, 2015).

In the other two studies (McNaughton et al., 2008; Vostal et al., 2015), the pre-service teachers were taught through in-person instruction and their use of the strategy was assessed in pre and post simulated interactions. Following instruction, all participants increased their
implementation of the LAFF strategy. Parents and teachers outside of the studies additionally
described post-instruction interactions more positively than the pre-instruction interactions,
suggesting that the pre-service teachers benefited from the instruction.

Given the research evidence, the LAFF strategy appears to be a promising method to
improve the relational skill set of pre-service SLPs. All participants across the studies increased
their implementation of the strategy during simulated scenarios following a relatively short
period of direct instruction. Parents and teachers outside of the studies additionally described
post-instruction interactions more positively, suggesting that the pre-service students benefited
from the instruction. These findings suggest that the specific instructional procedures used were
effective in teaching pre-service teachers and SLPs how to implement the multi-step LAFF
strategy. Each of the investigations employed the same instructional sequence of procedures,
which was drawn from research on strategy instruction (Kent-Walsh & McNaughton, 2005;
Schumaker & Deshler, 2006).

**Strategy Instruction and Learning Environment**

When using a strategy instruction framework, the goal is for instructors to identify the
component skills of a strategy and then teach learners to master, sequence, and demonstrate the
strategy in an efficient manner (Kameenui & Simmons, 1990). In the LAFF studies, the
instructional procedures were adapted from strategy instruction to include a pre-test, a
description of the LAFF strategy steps, a model of the strategy, and the opportunity to practice
the strategy. These findings suggest that strategy instruction is an effective technique to teach
pre-service SLPs and teachers relational skills such as the LAFF strategy.

Previous research using LAFF, while encouraging, has limitations. To date, the LAFF
strategy has only been taught through in-person instruction, which has a number of constraints.
For example, students must go at the pace of the instructor and learn and review the same content as others at the same time (Clark & Mayer, 2016). Additionally, students cannot pause, rewind, or maneuver throughout a lesson depending on their understanding of the material. Considering pre-service training programs, it may be particularly difficult to find extra time to provide instruction in relational skills since this content is often not part of the typical curriculum. In order to overcome some of these limitations, another delivery method may be beneficial for students such as the use of e-learning, or learning in an online environment.

E-learning is defined as instruction delivered on a digital device that is intended to support learning (Clark & Mayer, 2016). Although much of e-learning is designed to inform students (i.e., communicate information), there is evidence supporting the use of online environments designed to build specific skills (i.e., perform tasks) (Clark & Mayer, 2016). In these environments, the goal is to build skills and to teach learners how to adapt skills for real-world use, where each situation will vary. Given the importance of demonstrating relational skills in various settings, an online environment may be effective for teaching pre-service SLPs a strategy such as LAFF.

Despite the novelty of e-learning, it is important to note that it is not the online environment which makes instruction effective, but rather the instructional methods that are delivered through the online medium. In this study, principles of effective e-learning (Clark & Mayer, 2016) were paired with instructional procedures drawn from strategy instruction (Kent-Walsh & McNaughton, 2005) in order to teach relational skills to pre-service SLPs. Specifically, the instructional sequence outlined by Kent-Walsh and McNaughton (2005) was adapted for use in an online environment, and included the following stages: pretest and commitment to learning the strategy, description of strategy, demonstration of strategy, verbal practice of strategy steps,
controlled practice and feedback, advanced practice and feedback, post-test and commitment to implementing the strategy, generalization. Although strategy instruction has primarily been implemented and evaluated in traditional classroom learning environments (i.e., in-person instruction), there is some evidence of its effectiveness in an online environment (Douglas, McNaughton, & Light, 2013; Douglas, Kammes, & Nordquist, 2017).

Research Aims and Questions

The purpose of this study was to improve the relational skills of pre-service SLPs during interactions with simulated parents of children who use AAC. Specifically, this study aimed to add to the existing research by developing and evaluating an online training to teach the LAFF strategy to pre-service SLPs. Currently, it is unknown whether online instruction in the LAFF strategy will be more or less effective than in-person instruction. The following two research questions were proposed:

1. What are the effects of an online training in the LAFF strategy on pre-service SLPs’ use of the strategy skills in role plays with simulated parents?
2. What are the effects of an online training in the LAFF strategy on a parent’s perceptions of the pre-service SLPs’ family-centered behaviors?

Methods

Research Design

The current study employed a 2 (groups) x 3 (measurement times) switching replications experimental design (Salkind, 2010). In this study, two groups participated in pre-test simulation role plays (Time 1). The first group received training, and then participated in a second simulation role play. The second group completed a second role play without receiving the training (i.e., another “pre-test”). Following the second role play, the second group then received
the training. Both groups then participated in a third role play (See Figure 1). This design was chosen as it provided a control condition, replication of treatment effects, and a maintenance assessment in the group that received the training first (Cook, Campbell, & Peracchio, 1990). The switching replications design is considered one of the strongest and most effective experimental designs at controlling for threats to internal validity (Edmonds & Kennedy, 2016). It also eliminates the need to deny potentially beneficial treatment due to random assignment to the control group (i.e., Group 2).

Participants

Ethics approval was obtained from the Pennsylvania State University Institutional Review Board prior to recruitment. Participants were recruited from a graduate course on Augmentative and Alternative Communication in a Department of Communication Sciences and Disorders in Central Pennsylvania. The following inclusion criteria were used for participation:

1. SLP master’s students enrolled in a graduate level AAC course and
2. no prior exposure to the LAFF strategy. Of the 17 students in the course that met the inclusion criteria, 16 of the students provided consent to participate in the study. The 16 students were randomly assigned to Group 1 or Group 2 by a random number generator. Of these participants, 15 completed the study. One participant was unable to complete the study due to medical reasons and dropped out after the first role play. Although her demographic information is included in Table 1 (i.e., to demonstrate that the groups were similar on key features), data from the first role play are not included in the results.

Prior to the study, all participants provided demographic (i.e., age, gender, race, and ethnicity) and background information on their prior education, training, and experience working
with families and/or AAC (see Table 1). The participants consisted of 3 males and 13 females and ranged from 22 to 30 years of age. Fourteen of the participants identified their race and ethnicity as white and non-Hispanic. One participant identified as white and Hispanic, and another participant identified as more than one race, non-Hispanic. All participants reported a Bachelor’s degree as their highest degree obtained.

Regarding prior training, none of the participants reported that they had ever been trained in family-centered services or how to effectively interact with families. Three of the participants reported training in counseling during an undergraduate course and eight of the participants reported prior coursework in AAC (i.e. excluding current enrollment in their graduate AAC course). Regarding prior experience working with families, ten reported experiences including positions at daycare centers, schools, camps, etc. Six of the participants reported personal experiences with families of children with disabilities and five reported having prior experience with AAC. Table 1 displays the demographic characteristics of the students by Group 1/Group 2.

As shown, the groups were relatively similar on most key features. One feature on which the two groups varied was whether or not they had previous AAC experience. No pre-service SLPs in Group 2 reported experience, while five pre-service SLPs in Group 1 reported previous experience. This was anticipated to not impact results since all pre-service SLPs were enrolled in an AAC course at the time of the study and had completed 12 weeks (75%) of the course.

| INSERT TABLE 1 HERE. |

**Materials**

This study involved two sets of materials: the online training and the simulated role plays, which were used to measure the demonstration of the LAFF skills by the participants.

**Online training**
Training content. An online training was developed in order to teach pre-service SLPs how to actively listen and communicate effectively with parents of children with CCN. The pre-service SLPs were taught the 4-step LAFF strategy (McNaughton et al., 2008). Specifically, the pre-service SLPs were taught the 12 component skills within the 4-step strategy (See Figure 2).

Training format and environment. The online training consisted of four sections (i.e., introduction, LAFF strategy instruction, practice activities, and conclusion). Table 2 presents each of these sections, the strategy instruction stages in each section, the specific components of training used in each stage, and the estimated time for completion. The training was completely housed on Moodle, an e-learning platform which allows educators to create courses in a secure learning environment (“About Moodle”, 2017). All narrations in the training were provided by the first author.

Simulated role plays. Six simulated role plays were developed to simulate a parent’s meeting with the child’s SLP. Role plays were used in order to allow the pre-service SLPs to demonstrate their pre- and post-instruction skills in a supportive and low-risk environment. Following the recommendations of Dotgers and colleagues (2008) and Barrows (1987), the scenarios were based on actual concerns expressed by families of children with CCN (e.g., Anderson, Balandin, & Stancliffe, 2014; 2015; Bailey, Parette, Stoner, Angell, & Carroll, 2006; Marshall & Goldbart, 2008; McNaughton et al., 2008; Mandak & Light, 2018a). Each of the scenarios included a script and a description of the problem to be discussed with the SLP. Each script specifically listed four statements to be used during the interaction. Once the scenarios were initially developed, they were reviewed by a mother of a child with CCN who was
currently receiving SLP services. The mother was recruited through an online social media group and was unknown to the authors. She reported that her child used word approximations and a speech-generating device (SGD) to communicate. The parent was asked for her opinion on the realism, importance, and wording of the scenarios. Of the six scenarios, the parent indicated that four of the scenarios were both realistic concerns and “very important” for SLPs to be able to handle. The following four scenarios were thus included in the simulated interactions: (a) Parents wanting a new AAC device; (b) Parents seeing no need for AAC, because of worries about the impact on spoken language; (c) Parents worrying about social isolation of their child because of AAC; and (d) Parents feeling overwhelmed with the programming demands of the AAC device.

Each simulation was balanced across the three time points of the study, allowing each participant to be exposed to three of the four scenarios once. The scenarios were assigned to each participant to ensure that each group had an equal amount of exposure to each scenario at each time point.

Training of simulated parents. Four doctoral students studying speech-language pathology were recruited to play the role of parents of children with CCN (i.e., simulated parents). The doctoral students included three white women and one African-American man. The use of simulated parents follows a similar model to the use of simulated patients which originated in the medical field. Researchers in the field of teacher education crafted the pedagogy of simulated parents, specifically to prepare teacher candidates for parent-teacher conferences (Dotger, Dotger, & Maher, 2010; Dotger, Harris, & Hansel, 2008). Simulated parents have been used successfully in the postgraduate setting for the training of counseling skills (Farrell, Deuster, Donovan, & Christopher, 2008), communicating effectively (Thistle & McNaughton, 2015), and breaking bad news to parents (Vaidya, Greenberg, Patel, Strauss, & Pollack, 1999).
Investigations have also reported that interactions with simulated parents are viewed as authentic and positive experiences for students (Dotger et al., 2008).

Simulated parents are trained in a standardized and scripted way to present specific behaviors, statements, concerns, etc. Accordingly, the four doctoral students were required to attend a training on portraying a parent, which was given by the first author and lasted approximately 90 minutes. Each was given their script (i.e., four statements) and a specific profile with a description of the parent he or she would portray including informational content such as employment, marital status, and living arrangements (Dotger et al., 2008; see Supplemental materials). The simulated parents were first instructed to enter the room in which the pre-service SLP was waiting, and to sit in the chair closest to the door. The simulated parents were then instructed to use statement #1 near the beginning of the conversation, statements #2 and #3 during the conversation, and statement #4 if the pre-service SLP asked for additional thoughts or questions. The simulated parents were required to use statements #1-3, and had the option to use statement #4. If the pre-service SLP offered a solution or a plan for the next steps, the simulated parent was trained to end the interaction by agreeing with the proposed solution (e.g., “That sounds good. We can give that a try.”)

During the training, the simulated parents had the opportunity to practice their scenarios and ask any questions. During a final practice scenario, the first author observed the simulated parents and completed a checklist of the required statements. The simulated parents needed to demonstrate 100% of the target parent statements in order to complete the training. All simulated parents were blind to the conditions of the study and to the group assignment of the pre-service SLPs. The simulated parents were also not aware of the design of the study.
Procedural integrity. The procedural integrity of the simulated role plays was independently assessed by a graduate student in Special Education following the last role play. The graduate student was blind to both the conditions and goals of the study. Six videos of each simulated parent were randomly chosen, resulting in 24 total videos (53%). For each video, the graduate student identified whether each of the required statements was stated by the simulated parent. In all videos, the simulated parents used their required statements with 100% accuracy.

Social validity of the simulated role plays. The authenticity of the simulated parents was measured following the participants’ completion of their last role play. In response to, “The simulated parents were effective in portraying real parents,” seven (44%) of the pre-service SLPs strongly agreed with this statement, eight (50%) agreed, and one (6%) disagreed.

Procedures

Simulated role plays. The pre-service SLPs participated in three video-taped role plays, one at each time point (i.e., Time 1, Time 2, and Time 3), with two days separating each interaction. The role play interactions were balanced so the pre-service SLPs interacted with a different simulated parent at each of the three time points and each scenario was used a similar number of times across Time 1, Time 2, and Time 3. At each time point, the pre-service SLPs completed the same procedures:

1. The pre-service SLPs were told that they would be meeting with an individual playing the role of a parent of a child with CCN. The parent would have a specific concern and the pre-service SLPs were told to play the role of the child’s SLP.

2. The pre-service SLPs received a short summary of a scenario which described a child on his or her caseload. Each pre-service SLP had 10 minutes to review the scenario.
3. After 10 minutes of review, the pre-service SLPs were taken to a room by a researcher. Each room included a rectangular table with three chairs. Two of the chairs were across from each other on the long sides of the table, and the other chair was on a short end of the table.

4. The pre-service SLPs were told that the parent would knock on the door, come into the room, and sit in the chair on the long side of the table closest to the door. Once these instructions were given, the researcher started video recording and exited the room.

5. The simulated parent entered the room and sat in the chair closest to the door. He or she then responded to the pre-service SLPs according to his or her scenario script.

Access to online training. Following the first simulated role play for Group 1 (i.e., Time 1) and the second role play for Group 2 (i.e., Time 2), each pre-service SLP was given instructions to access and complete the online training on their personal computers before their next scheduled role play. Once they accessed the training, they were told the following: “In this training, you will learn a strategy to effectively interact and develop positive relationships with parents. Once you learn the strategy, you will have the opportunity to practice recognizing and using the strategy during SLP-parent interactions in an online environment. The training can be completed independently and does not need to be completed in one sitting. Learners must successfully complete all activities in order to complete the training. The training will take approximately 75-90 minutes.” Once granted access, there was no limit to how many times the participants could log-in to the training. Despite this, all pre-service SLPs only accessed the training once.

Measures

LAFF Scoring Rubric. In order to measure the participants’ use of the component skills in each strategy step, a scoring rubric was used which was adapted from past research
investigating the LAFF strategy (McNaughton et al., 2008; Thistle & McNaughton, 2014). Each of the 12 component skills of LAFF were included in the rubric. The score was determined by calculating the presence or absence of each skill. The dependent variable was the total score for all skills with a maximum score of 12 (i.e., 5 skills for the “L” step, 2 skills for the “A” step, 3 skills for the first “F” step, and 2 skills for the last “F” step). A coding manual was developed, which included the operational definitions for each of the 12 skills in the LAFF strategy. For each component skill, a definition was provided, as well as example statements, and exclusionary information, if appropriate (e.g., Do not count open-ended questions that are not aimed at getting more information; “Tell me when would be best to meet.”)

**Coding procedures.** A graduate student in Special Education completed the LAFF coding. The coder was trained by watching a 30-minute instructional video which described how to access, view, and code the simulated role play videos. The coder then viewed and coded 6 practice videos of students interacting with simulated parents. For each video, the coder was told to watch the entire video to obtain an initial impression of the interaction, and then score the presence of behaviors during a second viewing. Each of the 12 component LAFF skills were included in the rubric and were scored a 1 (or 0) depending on the presence (or absence) of the behaviors during the simulated interactions. The coder was 100% accurate in identifying the presence and absence of behaviors in the practice videos. Once training was complete, the coder was granted access to the role play videos in a balanced order. Each group of 15 videos included a similar number of role plays from each group of participants and from pre- or post-training.

In order to ensure reliable scoring, a second coder was also trained in the same coding procedures. This coder was also a graduate student in Special Education, blind to the conditions of the videos. The second coder scored 33% (n=15) of the videos. The reliability videos were
selected so the coder saw one video of each participant (n=15) at varying time points. The rubrics from each coder were compared for the 15 videos. Agreement was calculated by comparing each coder’s rating for each individual skill for a total agreement score out of 12. For example, if the two coders both agreed that a pre-service SLP used 7 out of the 12 LAFF skills and did not use 5 of the skills, and they agreed on the presence or absence of the same skills, their agreement was 12 out of 12 (i.e., 100%). The rubrics from each coder were compared, resulting in an agreement of 92% across sessions.

**Data Analysis.** Due to the small sample size and the likelihood of a violation of the assumptions of normality and homogeneity of variance, the data were analyzed using nonparametric methods (Maxwell & Satake, 2006). In order to determine the effects of the online training, a Mann-Whitney test was used to compare the gain in LAFF scores of Group 1 between Time 1 and Time 2 and the gain in LAFF scores of Group 2 between Time 1 and Time 2. It was hypothesized that the gain from Time 1 to Time 2 would be greater for Group 1, since they received training during this time. A Wilcoxon Signed Ranks test was also conducted to compare the gain in LAFF scores of Group 2 between Time 1 and Time 2 to their gain in LAFF scores between Time 2 and Time 3. It was hypothesized that Group 2 would demonstrate greater gains from Time 2 to Time 3, since they received training during this time.

**Forced Choice.** In addition to the LAFF scoring rubric, the simulated role plays for each pre-service SLP were assessed by a parent of child who used AAC by completing a forced choice question. Criteria for inclusion was to “be a parent of a child with complex communication needs (i.e., child is unable to use natural speech to meet his or her daily communication needs).” The parent was a 40-year old mother whose daughter used a tablet with an AAC app. She was recruited online through a private social media group, designated for
professionals who work with children who use AAC and parents of children who use AAC. The parent was blind to the conditions and procedures of the study. The parent viewed videos of the pre- and post-instruction role plays for each pre-service SLP, and answered the questions:

1. If you were the parent in these videos, which interaction would you consider most effective and successful?
2. In the video, what was the most effective behavior exhibited by the SLP?

Social validity

Following the last simulated role play, all of the participating pre-service SLPs were asked a set of questions aimed at assessing the social validity of the training content and the training offered through an online platform. The questions specifically evaluated: (a) the perceived usefulness of the relational strategies targeted, (b) the practicality of offering the training online, and (c) the usefulness of the various components of the online training.

Results

LAFF Scores

Table 3 lists the individual LAFF scores for each participant at each time point. The medians and ranges were calculated for both groups at each time point. No statistically significant difference was observed between the groups at Time 1, indicating that their initial behaviors were similar ($p > .05$). The medians for Group 1 were 3.5 at Time 1 (range 3-5), 10.5 at Time 2 (range 4-11), and 9.5 at Time 3 (range 6-12) (see Figure 3). The medians for Group 2 were 5.0 at Time 1 (range 2-6), 4.0 at Time 2 (range 3-7), and 10.0 at Time 3 (range 9-12).
The question of interest was whether the training resulted in improvements in the LAFF scores. Accordingly, the gain scores for each group were calculated between Time 1 and Time 2, and between Time 2 and Time 3. The gain from Time 1 to Time 2 for Group 1 demonstrated the effects of the training as did the gain from Time 2 to Time 3 for Group 2. The change from Time 2 to Time 3 for Group 1 represented a measure of maintenance of training effects.

A Mann-Whitney test was completed in order to compare the gains in LAFF scores for each group from Time 1 to Time 2. It was hypothesized that Group 1 would demonstrate greater gains since they completed the training between Time 1 and Time 2. Results showed that Group 1 had statistically significant greater gains ($Mdn = 5.50$) from Time 1 to Time 2 compared to the gains made by Group 2 ($Mdn = -1.00$), $U = 1.00$, $p = .002$, suggesting that the training was effective in increasing Group 1’s use of the LAFF strategy in the role plays.

A Wilcoxon Signed Ranks test was completed in order to compare the gains in LAFF scores for Group 2 from Time 1 to Time 2 (i.e., pre-training) to their gains from Time 2 to Time 3 (i.e., post-training). It was hypothesized that Group 2 would demonstrate greater gains between Time 2 and Time 3, since they completed the training during this time. It was determined that Group 2 had statistically significant greater gains from Time 2 to Time 3 ($Mdn = 7.00$) compared to their gains from Time 1 to Time 2 ($Mdn = -1.00$), $Z = -2.384$, $p = .017$, suggesting that the training was effective in increasing Group 2’s use of the LAFF strategy in the role plays.

**Online Training Completion**

The pre-service SLPs varied in the amount of time spent accessing the online instruction (range: 29 to 101 minutes; average: 61 minutes), as well as the number of completed training components. Group 1 spent an average of 56 minutes accessing the training, while Group 2 spent an average of 66 minutes. Eight of the pre-service SLPs completed all training components, 5
completed all components except one application exercise, and two completed all training components except the two application exercises.

**Forced Choice**

In addition to the LAFF scoring rubric, the role plays were assessed by a parent of child who used AAC by completing a forced choice question. In response to, “If you were the parent in these videos, which interaction would you consider most effective and successful?” the parent selected the post-test video as more effective and successful for 14 of the 15 pre-service SLPs.

In response to, “What was the most effective behavior exhibited by the SLP?” the parent identified the following behaviors as “most effective”, (a) asking open-ended questions and taking time to ensure that the parent’s concern is fully understood (identified 9 times), (b) keeping the conversation focused on the concern and addressing it directly, without getting too carried away with suggestions and information (identified 4 times); and (c) showing empathy and understanding, and acknowledging the parent’s concern as valid (identified 2 times).

**Social Validity**

In response to the social validity questions, 100% of the participants stated that they would recommend that others learn the LAFF strategy. Six simply stated “Yes”, while others provided additional thoughts. Two reported that they were more confident after the training, five reported that the LAFF strategy provided scaffolding support, and two reported that the LAFF strategy was important to learn and that it would be a good addition to the graduate curriculum.

The pre-service SLPs additionally offered many benefits to using the LAFF strategy. Seven (47%) of the pre-service SLPs reported that the strategy provided a step-by-step process and a helpful framework to use during the interactions. One stated that the strategy was easy to
remember and included intuitive steps. Another reported that when using the strategy, the conversation flowed better since she knew what to say.

In addition to benefits of using the LAFF strategy, the pre-service SLPs were asked about disadvantages of strategy use. Three (20%) of the pre-service SLPs reported that there were no disadvantages to using the LAFF strategy. Twelve (80%) of the pre-service SLPs reported that using the strategy could be viewed as scripted and unnatural. Two (13%) of the pre-service SLPs also stated that the strategy may not be appropriate for all situations.

The participants additionally shared their opinions regarding the online training environment with 88% of the pre-service SLPs agreeing or strongly agreeing that “An online environment was effective for teaching the LAFF strategy.”

Discussion

The goal of this study was to develop and evaluate an online training to teach pre-service SLPs a relational skills strategy designed to increase their demonstration of family-centered behaviors during interactions with parents of children with CCN. Overall, the training appeared to provide an effective, efficient, and socially valid means of teaching pre-service SLPs how to implement the LAFF strategy. All participants increased their use of the LAFF strategy following the completion of the online training. Almost all of the participants also improved in their demonstration of family-centered behaviors, as measured by the perceptions of a parent of a child use used AAC.

Effectiveness of Intervention

This is the first study to investigate the effectiveness of teaching the LAFF strategy in an online environment. As hypothesized, the online training resulted in an increase in the implementation of the LAFF strategy skills during post-training interactions for Group 1 and
Group 2. After a relatively short period of instruction (i.e., average of 61 minutes), Group 1 improved from demonstrating a median of 3.5 skills pre-training to a median of 10.5 skills post-training and Group 2 improved from a median of 4.0 skills to a median of 10.0 skills.

Although direct comparisons cannot be made to previous investigations of the LAFF strategy due to varying methods of measurement (i.e., different scoring rubrics), similar improvements were observed in the present study compared to the previous LAFF investigations. For example, the first LAFF study (McNaughton et al., 2008) used a pre-post design and a scoring rubric to investigate the effects of an in-person LAFF training for pre-service teachers. After 120 minutes of in-class instruction in the LAFF strategy and 30 minutes of outside class activities, the pre-service teachers improved from a score of 4 to 16 (medians) out of 20 (60% increase). A later LAFF investigation (Thistle & McNaughton, 2015) also used a pre-post design and a scoring rubric out of 20, but with pre-service SLPs. After 90 minutes of in-class instruction, the pre-service SLPs improved from an average score of 4.17 to 17.43 (66% increase). In the same year, Vostal et al. (2015) evaluated pre-service teachers’ use of the LAFF strategy before and after 150 minutes of in-person training using a scoring rubric out of 17. Mean scores improved from 3.6 at pre-test to 15.8 at post-test (72% increase). Thus, despite the switch to the online environment in the current study, the pre-service SLPs were able to make gains in their implementation of the LAFF strategy. Considering the various components of the online training, the effectiveness of the instruction across studies could be attributed to the use of the strategy instruction model, the use of the online environment, or a combination of the two.

**Strategy Instruction.** There is much evidence that use of the strategy instruction model leads to positive outcomes for individuals learning a wide range of skills (e.g., Kent-Walsh et al., 2015), including pre-service professionals learning the LAFF strategy (McNaughton et al., 2008;
Thistle & McNaughton, 2015; Vostal et al., 2015). Per the strategy instruction framework, the training included a pre-test, a description of the LAFF strategy skills, a model of the strategy, and the opportunity to practice the strategy. The components of the training and the stages of strategy instruction were designed to promote active learning. If information is simply transmitted to passive learners, the learners will be limited in their ability to recall the content or transfer the learning to other situations (Darling-Hammond, 1995). Students learn by doing, through direct experiences with the content. For these reasons, the pre-service SLPs were not only provided with information regarding the LAFF strategy, but with opportunities to use and experience the strategy. The findings of this study add support to previous evidence demonstrating the effectiveness of the strategy instruction model when teaching adults without disabilities (e.g., Binger et al., 2010; Thistle & McNaughton, 2015).

Although all stages of strategy instruction were incorporated into the online training, it must be noted that some of the pre-service SLPs did not complete all components of instruction—specifically, some did not complete the “application” activities. The goal of the two application activities was to learn how to apply the target strategy to meet the demands typically found in the natural environment and to start to build fluency doing so. It is likely that the lack of completing these activities may have impacted the performance of these pre-service SLPs with the strategy post-training. For example, of the four pre-service SLPs who demonstrated the fewest number of strategy skills post-training, three did not complete the generalization activity. The lack of completion by some pre-service SLPs may be one limitation of e-learning. If the LAFF strategy was taught in a face-to-face setting, instructors would be able to monitor and ensure completion of all activities. Future research should investigate how to ensure completion of all instructional components in an online environment in order to promote mastery.
Despite this limitation of the online learning environment, overall the findings show that the strategy instruction procedures were successfully incorporated into an online environment, indicating benefits of online learning. The majority (88%) of the participants reported that the online environment was effective for teaching the LAFF strategy. There are many reasons why the online environment may have promoted the learning of the LAFF strategy.

**Online learning.** First, the pre-service SLPs were able to maneuver throughout the online training at their desired pace. Additionally, they were able to pause, rewind, or review content as necessary. These are advantages compared to face-to-face instruction, where students must learn and review the same content as others at the same time (Clark, 2016). The online setting additionally allowed the presentation of various types of media (e.g., text, graphics, audio, etc.), which have been shown to draw attention to relevant content and improve engagement (Mayer, 2009).

One of the biggest advantages of the online setting may be exposure to step-by-step demonstrations and multiple example scenarios. For novice learners without knowledge of the strategy, examples are especially important (Clark, 2014). Evidence has shown that the most effective learning of strategy steps results from two or more examples that reflect the same guidelines but vary on their surface features (Clark, 2014). In this study, four example scenarios were included which illustrated four SLPs using LAFF with four different parents and concerns.

Considering that the impact of the online training appeared relatively similar to the impact of in-class training in prior LAFF investigations, the efficiency of the training should be considered. The online training in the current study took participants an average of 61 minutes to complete (range: 29 to 101 minutes), which was less instructional time compared to previous
investigations of LAFF. In this study, the efficiency of learning may point to potential benefits of the online environment and the potential accelerated pace of learning the LAFF strategy.

Component Skills of LAFF

Although the participants in the present study showed overall improvement in their implementation of the LAFF strategy, there were some strategy skills that were demonstrated less frequently than others. The one component skill that was demonstrated the least during the post-training role plays was asking open-ended questions. Eight (53%) of the participants did not demonstrate an adequate number (i.e., 2 or more) of relevant open-ended questions during the post-training role plays. In order to receive credit for the demonstration of this skill, SLPs had to “ask 2 or more relevant open-ended questions to get more information about the problem.” In the role plays immediately following training, only 7 (47%) of the SLPs demonstrated this skill.

Most of the pre-service SLPs asked questions aimed at acquiring specific information, rather than open-ended questions that could promote discussion. These types of questions are sometimes referred to as “data questions”, as they gather facts about the individual or context (AbuSabha, 2013). These types of questions gather information, but do not move a discussion forward or spark the conversation. Considering these questions’ potential for acquiring facts about the parent’s concern, it may not be surprising that the novice SLPs resorted to their use. Some examples of these types of questions from the pre-service SLPs included (a) Have you tried modeling speech? (b) Have you done any hearing or visual assessments? (c) Is he using it at home? and (d) Do you think it’s a well-suited device? These questions only require a short answer from the parent, often in the form of a one-word response.

It seems that the training did not adequately prepare the pre-service SLPs to ask open-ended questions. The skill was taught in a similar way to all other LAFF skills. It was first
described, then demonstrated. During the strategy skill description, the pre-service SLPs were presented with four open-ended questions that could be applied to most scenarios (i.e., the same questions that were taught to the pre-service SLPs in Thistle & McNaughton (2015)): 1) What would I see if I was there? 2) Tell me about a time when this was not a problem; 3) What do you see as the ideal solution; and 4) Tell me who else you have spoken with regarding your concern.

While practicing in the online environment, the pre-service SLPs may have relied on the four questions without adequately learning how to ask open-ended questions. Contrary to a real interaction, the pre-service SLPs were able to take their time when responding to the video prompts during the practice exercises. When faced with a real parent concern during the role plays, the pre-service SLPs may not have been prepared to generate relevant open-ended questions and adapt in real-time, in response to the parent.

The observed lack of open-ended questions demonstrated by the pre-service SLPs may indicate an important avenue for future training development, including increased emphasis on building rapport with parents, generating relevant open-ended questions based on parent concerns, providing more opportunities to practice the skill of asking open-ended questions, and recognizing and addressing parents’ emotions during interactions (Luterman, 2020).

**Parent Perspective**

Another goal of this study was to investigate the effects of the online training in the LAFF strategy on a parent’s perceptions of the pre-service SLPs’ family-centered behaviors before and after the training. The parent perceived the post-training interactions as more family-centered than the pre-training interactions for 14 out of the 15 pre-service SLPs.

The parent was also asked to identify the most effective behaviors exhibited by the SLPs in each simulated role play interaction. The behaviors identified as most effective by the parent
were asking open-ended questions and taking time to ensure that the parent’s concern was fully understood.

It is likely that the LAFF strategy contributed to the pre-service SLPs’ demonstration of these specific behaviors. For example, specific component skills could have impacted the way the SLPs were perceived as taking their time. In the L-step, the pre-service SLPs were taught to “give the parent the floor” and show that they were there to listen and fully understand the concern. They were taught that they could not provide assistance until they fully understood the concern as perceived by the parent (McNaughton et al., 2008).

In the A-step, the students were taught the importance of allowing silence during an interaction. They were taught to take notes, which potentially allowed periods of silence while they were writing. Although the SLPs’ use of silence was not measured, they were taught that the positive benefits included “allowing the parent to process information, maintaining a family-centered focus, and providing an open invitation to the parent to talk.” If the SLPs permitted silence, they were most likely observed as not rushing through the interaction.

The first F-step likely contributed to the parent’s identified behaviors as well. The students were taught to “check for accuracy” (e.g., “Do I have everything right?”) which was to ensure that both parties had a clear understanding of the concern before proceeding. This skill provided evidence that the pre-service SLP was actively listening and was working to understand the issues from the parent’s perspective. By checking for accuracy, the pre-service SLP may additionally have provided the parent an opportunity to clarify or provide more information.

Clinical Implications

The findings from this study suggest important clinical implications for training pre-service SLPs to become family-centered clinicians. First, many of the pre-service SLPs were
lacking in relational behaviors during the role plays prior to training. These findings highlight the
importance of graduate programs including family-centered content early in the curricula, as well
as the development of effective interactional skills. As one participant stated, “A counseling
course that incorporates LAFF could be an excellent addition to our school’s curriculum.” For
novice clinicians, strategies such as LAFF, can provide support, scaffolding, and improved
confidence, as expressed by many of the students post-training.

Second, the findings indicate that pre-service SLPs can be taught how to demonstrate the
skills targeted in the LAFF strategy during interactions with simulated parents after a relatively
short-period of online instruction. With an average of just 61 minutes of online training, all of the
participants improved their implementation of the LAFF strategy. Despite the advantages of e-
learning, to date there has been limited research examining the effectiveness of asynchronous
online learning for pre-service SLPs. Two studies have examined pre-service SLPs’ perceptions
of online learning modules in Communication Science and Disorders, but reported no learning
outcomes (Ginsberg, 2008; Tattersall; 2015). Another study reported positive learning outcomes
for students learning anatomy and physiology, but the instruction was presented in a hybrid
design (i.e., online and in-person instruction; Lemoncello; 2015). There only appears to be one
study to date which examined an asynchronous online learning module on pre-service SLPs
phonetic transcription knowledge and skills (Krimm, Schuele, & Brame, 2017). After 1-3 hours
of engagement with the online module, all students demonstrated improvements in phonetic
transcription knowledge and skill. The findings of the present study add to this evidence as they
highlight the effectiveness and efficiency of an online environment for pre-service training. They
additionally show the potential for teaching clinical skills in a non-traditional format, especially
if no one on faculty has expertise in a specific but essential area such as family-centered services.
Limitations and Future Research

Despite the contribution of this study to enhancing our understanding of pre-service training of SLPs in family-centered services, there are limitations to consider and important directions for future research. First, there were only 15 pre-service SLPs from one graduate program who participated in the training. With a sample size this small, it is difficult to extend the findings to the wider population. It is necessary to investigate the effects of the training with larger groups of pre-service SLPs from a range of programs and geographical locations. In addition to pre-service SLPs, the effectiveness of online training in family-centered skill sets should be investigated with SLPs who are already working, as in-service SLPs have reported challenges to providing effective family-centered services (Mandak & Light, 2018).

An additional limitation is the sole focus on the LAFF strategy and implementation of LAFF during AAC services. Although LAFF encompassed many evidence-based relational skills found in the literature, there may be other relational skills that play an important role in family-centered AAC services. LAFF is also potentially limiting in that it is too scripted. Considering that 80% of the pre-service SLPs reported that the strategy could be viewed as unnatural, LAFF may need improvements in order to adequately prepare students to provide individualized family-centered services. Future research is required to determine which relational skills are critical to the delivery of family-centered services and how to prepare pre-service SLPs. It is also necessary for pre-service SLPs to consider providing family-centered services to families and children who do not require AAC. Although all scenarios included in the training were based on real concerns of parents of children who use AAC, it is vital that pre-service SLPs are prepared to handle unique concerns from parents of children with a range of speech, language, and hearing impairments. Future research is necessary to identify which relational skills are most effective...
Another limitation is related to the sole use of simulated role plays and a lack of assessing generalization to actual parents of children with CCN. By using simulated role plays, the pre-service SLPs’ use of the LAFF strategy was measured during one, brief moment in time. The short interaction may not have provided an accurate demonstration of the pre-service SLPs’ relational skills. When working with actual families, relationships build over time and the use of relational skills may improve as the relationship grows. Future research should evaluate how pre-service SLPs’ use of relational skills with parents changes over extended periods of time, and whether parents’ perceptions change as a result of relational skill growth.

It is also possible that the pre-service SLPs would have demonstrated different behaviors when interacting with real parents. Despite the majority of the students reporting that the simulated parents were effective in portraying real parents, it is necessary to assess the implementation of the LAFF strategy with real parents in future LAFF investigations.

The focus on improving only the relational skills of the pre-service SLPs is also a limitation. Considering that there are other skills necessary to provide family-centered services (i.e., participatory skills; Dunst et al., 2007), future research should investigate whether these skills can be taught effectively and efficiently in an online environment as well.

**Conclusion**

Although family-centered AAC services are recognized as best practice, evidence suggests that families do not always receive these services from their child’s SLP (Iacono & Cameron, 2009; Mandak & Light, 2018a, 2018b). One avenue for improving the family-centered
skill set of SLPs is through improvements to their pre-service training. Findings from this study suggest that an online training, that targets an evidence-based strategy and incorporates principles of effective e-learning and research on effective instruction, was effective in teaching pre-service SLPs how to demonstrate a relational skills strategy during interactions with simulated parents. Following approximately 60 minutes of training, all pre-service SLPs improved in their implementation of the strategy and reported that they would recommend the use of the strategy to others. In addition to strategy use, many of the participants were perceived as more family-centered by a parent of a child who used AAC, post-training.

Although relational skills are just one set of skills that contribute to a family-centered approach, they are vital when providing services to families with children with CCN. It is crucial that SLPs demonstrate relational skills when interacting with parents, as research suggests that this will lead to greater family satisfaction and family well-being (Dunst et al., 2007). If families are satisfied, there is a higher likelihood of developing a successful and collaborative partnership among families and SLPs, leading to improved AAC outcomes. In order to improve pre-service training and ensure increased delivery of family-centered services, future research is necessary. Future studies should investigate the effects of online family-centered trainings on larger groups of students and whether other family-centered skill sets can be effectively taught through an online environment.
Acknowledgments

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https://doi.org/10.1177/002246699603000105


https://doi.org/10.1001/archpedi.153.4.419

Figure Caption Sheet

Figure 1: Timeline of study procedures.

Figure 2: The 12 component skills of the LAFF strategy with example statements.

Figure 3: Median LAFF scores out of 12 for the Group 1 and Group 2 at each time point.
Table 1

**Characteristics of participants at Time 1**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Gender</td>
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</tr>
<tr>
<td>Female</td>
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<td>Non-Hispanic or Latino</td>
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<td>Previous training in interaction/counseling strategies</td>
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<td></td>
</tr>
<tr>
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</tr>
<tr>
<td>No</td>
<td>5</td>
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</tr>
<tr>
<td>Previous AAC coursework (excluding current enrollment)</td>
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<td>Yes</td>
<td>5</td>
<td>62.5</td>
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<tr>
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<td>Previous experience working with parent or family members professionally?</td>
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<tr>
<td>No</td>
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<td>Previous personal experience with family of children with disabilities?</td>
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<tr>
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</tr>
<tr>
<td>No</td>
<td>5</td>
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<tr>
<td>Previous experience with AAC? (professionally or personally)</td>
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<tr>
<td>Yes</td>
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<tr>
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### Online training format and content

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<th>Strategy Instruction Stages</th>
<th>Components of the Online Training</th>
<th>Approximate Time for Completion</th>
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<tbody>
<tr>
<td>Introduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>◆ Pre-test and make commitment</td>
<td>● Video demonstrations of successful and unsuccessful parent-professional interactions</td>
<td>12 minutes</td>
</tr>
<tr>
<td>LAFF Strategy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>◆ Description of strategy</td>
<td>● Text/audio description of the strategy skills</td>
<td>12 minutes</td>
</tr>
<tr>
<td>◆ Demonstration of strategy</td>
<td>● Video model of the strategy skills</td>
<td>12 minutes</td>
</tr>
<tr>
<td>◆ Verbal practice of strategy steps</td>
<td>● Point-form open ended question to recall the strategy steps</td>
<td>3 minutes</td>
</tr>
<tr>
<td>Practice Activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>◆ Controlled practice and feedback</td>
<td>● Recognition exercise: Video scenario with questions to assess recognition of the strategy skills (i.e., “For each component of LAFF, you will select 'Present' or 'Not present.'”)</td>
<td>6 minutes</td>
</tr>
<tr>
<td>◆ Advanced practice and feedback</td>
<td>● Application exercise: Video scenario with pauses and prompts to demonstrate strategy skills (i.e., “What would you do/say next?”) ○ Completed with the use of the LAFF checklist</td>
<td>15 minutes</td>
</tr>
<tr>
<td>Conclusion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>◆ Post-test and commitments</td>
<td>● Final application exercise: Video scenario with pauses and prompts to demonstrate strategy steps (i.e., “What would you do/say next?”) ○ Completed without the use of the LAFF checklist</td>
<td>15 minutes</td>
</tr>
<tr>
<td>◆ Generalization</td>
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</tbody>
</table>
Table 3

*Individual LAFF scores out of 12 and medians for Group 1 and Group 2 at each time point.*

<table>
<thead>
<tr>
<th>LAFF Score</th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group 1</strong></td>
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<tr>
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<td>10</td>
<td>11</td>
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<tr>
<td><strong>Median</strong></td>
<td>3.5</td>
<td>10.5</td>
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<tr>
<td><strong>Group 2</strong></td>
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<tr>
<td><strong>Median</strong></td>
<td>5.0</td>
<td>4.0</td>
<td>10.0</td>
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</table>
Through an online module, students were taught the LAFF strategy which consisted of four steps (i.e., L, A, F, F) and 12 component skills.
## LAFF CHECKLIST

<table>
<thead>
<tr>
<th>Step</th>
<th>☑ SLP behaviors</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>L</strong> LISTEN and show interest</td>
<td>□ Greet the parent, and offer some small chit chat</td>
<td>“Hi, thanks for coming in today...”</td>
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<tr>
<td></td>
<td>□ Ask about the reason for meeting</td>
<td>“What would you like to talk about today?”</td>
</tr>
<tr>
<td>Empathize</td>
<td>□ Make a statement of empathy and understanding</td>
<td>“I can understand why you are concerned; this is a serious problem”</td>
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<tr>
<td>Communicate respect</td>
<td>□ Thank the parent for coming to meet you</td>
<td>“I appreciate that you came to talk with me.”</td>
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<td></td>
<td>□ Show appropriate body language</td>
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</table>

Goal of this step: To communicate that the SLP is doing his or her best to understand the parent’s thoughts and feelings (empathy) and that how the parent is feeling is important to the SLP (respect).

| **A** ASK questions | □ Ask the parent for permission to take notes. | “Do you mind if I take some notes while we talk?” |
| | □ Ask relevant open-ended questions | “What would I see if I was there?” |

Goal of this step: To ask good questions that will gather information on how the parent sees the problem, while communicating respect for the parent’s point of view.

| **F** FOCUS on the issues | □ Summarize the parent’s concerns | “I’d like to review what we have talked about” |
| | □ Check for accuracy | “Do I have everything right?” |
| | □ Ask if the parent would like to add anything | “Is there anything else you’d like to add?” |

Goal of this step: To make sure that there is a clear understanding of the issues before moving ahead.

| **F** Find a FIRST step | □ Consider the information provided and identify a plan | “I think the first step is to get more information and then we will start to think about possible solutions together.” |
| | □ Plan a follow-up meeting | “I will be back in touch by Friday.” |

Goal of this step: To consider the information obtained up to that point and think about next steps.
Figure 3

- Group 1
- Group 2

<table>
<thead>
<tr>
<th>Time Point</th>
<th>Group 1</th>
<th>Group 2</th>
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</thead>
<tbody>
<tr>
<td>Pre</td>
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<tr>
<td>Post</td>
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<tr>
<td>Pre</td>
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</tbody>
</table>

LAFF Score

Time 1
Pre Pre

Time 2
Post Pre

Time 3
Post Post